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Peer crowd affiliation as a segmentation tool for young adult tobacco use

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ABSTRACT

Background In California, young adult tobacco prevention is of prime importance; 63% of smokers start by the age of 18 years, and 97% start by the age of 26 years. We examined social affiliation with 'peer crowd' (eg, Hipsters) as an innovative way to identify high-risk tobacco users.

Methods Cross-sectional surveys were conducted in 2014 (N=3368) among young adult bar patrons in 3 California cities. We examined use rates of five products (cigarettes, e-cigarettes, hookah, cigars and smokeless tobacco) by five race/ethnicity categories. Peer crowd affiliation was scored based on respondents' selecting pictures of young adults representing those most and least likely to be in their friend group. Respondents were classified into categories based on the highest score; the peer crowd score was also examined as a continuous predictor. Logistic regression models with each tobacco product as the outcome tested the unique contribution of peer crowd affiliation, controlling for race/ethnicity, age, sex, sexual orientation and city.

Results Respondents affiliating with Hip Hop and Hipster peer crowds reported significantly higher rates of tobacco use. As a categorical predictor, peer crowd was related to tobacco use, independent of associations with race/ethnicity. As a continuous predictor, Hip Hop peer crowd affiliation was also associated with tobacco use, and Young Professional affiliation was negatively associated, independent of demographic factors.

Conclusions Tobacco product use is not the same across racial/ethnic groups or peer crowds, and peer crowd predicts tobacco use independent of race/ethnicity. Antitobacco interventions targeting peer crowds may be an effective way to reach young adult tobacco users.

Trial registration number NCT01686178, Pre-results.

INTRODUCTION

Young adulthood represents a period of time where individuals experiment with risky behaviours, including using tobacco products.¹ Although smoking has decreased in young adults, smoking rates in California were between 11% (women) and 16% (men) in 2012; 63% of smokers start by the age of 18 years, and 97% start by the age of 26 years.² In addition to cigarette smoking, young adults are at risk for other tobacco product initiation: the 2012–2013 National Adult Tobacco Survey (NATS) found that among 18–26-year-olds, 8.3% used e-cigarettes, 16.8% hookah, 16.8% cigars and 7.5% used smokeless tobacco.³ Tobacco corporations dedicated sizeable resources to encourage young adult tobacco use, and these promotional activities lead to early adoption of tobacco products and continued use among

adolescents and young adults.⁴ Soneji *et al* (2014) found that 12% of 15–17-year-olds and 26% of 18–23-year-olds had been exposed to some type of direct marketing from tobacco companies. According to the Federal Trade Commission, in 2012, tobacco companies spent \$113.6 million in advertising at adult-only public venues, such as bars or nightclubs.⁵ About one-third of young adults in California attend bars, and current smokers and susceptible never-smokers have an increased likelihood to patronise bars compared to committed non-smokers.^{6–7}

Lifestyle tobacco promotions targeting young adults build associations between tobacco brand identities and young adults' emerging social identities.⁸ Social identity theory^{9–11} postulates that a major element of self-concept is a direct consequence of social and group memberships. Group norms become more important for those who have salient social identities. Targeted marketing techniques can be used to shape norms and attach certain meanings to behaviours to promote health behaviours and market unhealthy behaviours such as smoking.^{12–14}

Targeted tobacco marketing has long included campaigns that target specific racial or ethnic groups.^{15–18} Racial and ethnic minority groups are not only at high risk for tobacco use but also are disproportionately affected by the health-related consequences.¹⁹ Advertising receptivity differs by racial/ethnic group,²⁰ and racial/ethnic differences in tobacco use are most pronounced during early adolescence and early 20s and decrease over time.^{21–22} However, race and ethnicity are not the only way to segment young adults to develop risk profiles. Tobacco companies have long used categories defined by psychographic factors or cultural affiliation (such as Hipster or Hip Hop culture) for targeted marketing campaigns.^{23–25} Peer crowd affiliation is one innovative way to approximate psychographic and cultural segmentation to identify high-risk subgroups among young adult bar patrons.¹⁴ 'Peer crowds' are the macro-level connections between peer groups with similar values, interests, lifestyles, styles of dress, media consumption habits, influencers and social tendencies (eg, Hipsters). While a young adult has a local peer group s/he socialises with, the young adult and his/her peer group belong to a larger 'peer crowd' that shares significant cultural similarities across geographic areas. Since peer crowds are connected to young adult social identities and several lifestyle factors and values, messages targeted to peer crowd may be more relevant than those tailored to demographic characteristics alone. Evidence suggests that using peer crowds to target specific young people



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either for tobacco messaging or antitobacco messaging is an effective strategy.^{13 25} However, it is still challenging to identify and operationalise measurement of affiliation with a peer crowd.²⁶ Peer crowd affiliations are typically related to lifestyle norms and are defined by peers based on reputations and social affiliations. Different peer crowds are often related to various risky health behaviours.²⁷

As such, we hypothesised that affiliation with peer crowds will be significantly associated with tobacco use behaviours independent of demographic factors. If the hypothesis is confirmed, using peer crowd affiliation along with demographic factors could potentially facilitate more efficiently targeted antitobacco messaging.

METHODS

Participants and procedure

Cross-sectional surveys were conducted in 2014 (N=3366) among bar patrons in Los Angeles, San Diego and San Francisco using randomised time-location sampling. Key informant interviews were used to compile lists of bars commonly attended by young adults, and the dates and times during which young adults were most likely to frequent those bars. Next, venues, dates and times were randomly selected, and trained study personnel visited the selected bars to survey young adult patrons using probability sampling techniques. Time-location sampling is a technique used often with high-risk or hard-to-reach populations in places they are likely to be (eg, men who have sex with men), and the method has been used previously to study young adult tobacco users in bars.^{6 28} Study personnel provided a pencil-and-paper survey to participants between the self-reported ages of 18 and 26 years who lived in the city of interest. Participants provided verbal informed consent to complete questionnaires, and patrons unable or unwilling to provide consent or who appeared to be intoxicated were not asked to complete the questionnaire. All data collection procedures were approved by the University's IRB. We examined current use rates of five products (cigarettes, e-cigarettes, hookah, cigars or cigarillos and smokeless tobacco) and use of any product. Data were collected as part of a larger tobacco prevention study which uses methods described previously.²⁹

Measures

Demographics

Demographic variables included age, sex, sexual orientation, race/ethnicity and education. Participants were asked to report their date of birth (based on this date, we were able to calculate age), sex (male/female) and self-reported sexual orientation (1=straight, 2=gay or lesbian, 3=bisexual, 4=other), which was recoded into a dichotomous variable (straight/not straight). Race/ethnicity items were recoded into a single five-level variable based on two items. Participants were asked, "Are you of Hispanic, Latino, or Spanish origin?" (yes/no). They were asked, "What is your race?" (African-American, Asian, White, Hawaiian or Pacific Islander, American Indian or Alaskan Native, and more than one race) and were instructed to select all that apply. The final levels for race and ethnicity were Non-Hispanic (NH) White, NH Black, NH Asian or Pacific Islander, NH Other and Hispanic. Education was assessed using the question, "Which statement best describes your current education status?" (1=I go to a college in a local area, 2=I go to a college NOT in a local area, 3=I have graduated from a college, 4=I dropped out of a college, 5=I graduated high school/GED). This variable was recoded into a dichotomous variable (1=currently in college or graduated, 0=dropped out or no college).

Peer crowds

We measured affiliation with six different peer crowds (Hipster, Country, Hip Hop, Partier, Homebody and Young Professional; figure 1). These informal names are used only for reporting purposes, and the names did not appear on the survey; instead of using names or labels, affiliation with the peer crowd was based on photo selection. Based on formative research,¹⁴ we used the 'I-Base Survey' measure to determine peer crowd affiliation. Participants viewed a grid of images of young adults that had been consistently selected to represent the various peer crowds in focus groups. Survey respondents were instructed to choose three photos each from a male and female grid that 'best fit into your main group of friends'; the peer crowd that was represented by each photo then scored 3, 2 or 1 point based on rank. Participants were also asked the same question for those who 'least fit into your main group of friends', scoring -1, -2 and -3, respectively. Scores from the male and female grid selections were added together, so the total score for each peer crowd ranged from -12 to 12. For example, if an individual chose all 'Hipster' pictures (three male and three female) as the pictures that best fit their friend group, and no Hipster pictures were selected as 'least likely to fit', they would receive a score of (3+2+1 (male picture selection) + 3+2+1 (female picture selection) = 12 total on the continuous Hipster score variable. Scores for affiliation with each peer crowd were analysed as continuous variables. In addition, a single categorical variable reflecting the 'best fit' peer crowd affiliation was created based on the peer crowd with the highest score. For example, if a person selected Hipster and partier images and scored 8 points based on Hipster selection and 4 points based on Partier picture selection, they would be classified as Hipsters in the categorical variable.

Tobacco use

Current use of each of the five different tobacco products was the main outcome variables. Participants were asked, "In the past 30 DAYS, on how many days (0–30) did you do each of the following?" for smoking, e-cigarettes, hookah, cigars and cigarillos, and smokeless (snus and spit). Each of these variables was dichotomised to indicate use (1 or more days) versus no use (0 days). A variable indicating use of any of these products was also created.

Statistical analyses

Descriptive statistics detailing demographic characteristics, peer crowd affiliation and tobacco product use were computed (table 1). Next, pairwise comparisons of use rates across peer crowd and race/ethnicity were performed (table 2). Tukey's honestly significant difference (HSD) test was used to adjust for the number of comparisons.³⁰

The final analysis consisted of two parallel analyses—a series of six logistic regressions (one for each tobacco product and any use). Predictors of each tobacco product included peer crowd (first as a categorical and next as a continuous measure), race/ethnicity, sex, education and sexual orientation. All analyses were completed using SAS statistical software (SAS, SAS/STAT 9.2 User's Guide, 2008) and accounted for clustering by city.³¹

RESULTS

Sample description

Our sample included 3366 young adults aged 18–26 years. The mean age was ~24 years, and the sample was fairly evenly divided between men and women. The sample was racially and







Peer Crowd (label used internally only)	Sample Images Representing Crowd	Description	Core Values
Homebody		Preferring a quiet night at home over a loud night at a bar or club, Homebody young adults have other priorities in their life besides being in the center of the party. They often act more mature than other groups and may be further along on family planning.	<ul style="list-style-type: none"> • Not motivated by social status or environments • Have other priorities besides socializing, such as family, career or religion • Prefer a small number of close friends over many acquaintances
Country		Often from rural areas, Country young adults value their community, family and country. They enjoy outdoor activities like hunting, mudding and doing things with their hands.	<ul style="list-style-type: none"> • Strongly value family and tradition • Are very patriotic • Prefer country music over other genres • Prefer a small number of close friends over many acquaintances
Hip Hop		Often from urban areas, Hip Hop young adults believe they have to overcome a disproportionate amount of life struggles to succeed. They work hard to present an image of strength and success through their clothing, mannerisms and bravado.	<ul style="list-style-type: none"> • Value strength, honor and respect • Prefer hip hop and rap music over other genres • Clothing and style are important and used as a status symbol
Hipster		Hipsters are a counter culture that works to differentiate themselves from mainstream cultures like Partier. They value creativity and individuality and often create new trends that trickle down to other peer crowds.	<ul style="list-style-type: none"> • Value individuality and creativity • Prioritize supporting local art, music and other creative • Prefer indie and rock music over other genres • Are trendsetters
Partier		Driven by their desire to always be where the social action is, Partiers love going out to bars, nightclubs and parties that play current dance music. They dress to impress and take great care of their appearance.	<ul style="list-style-type: none"> • Highly value social status, and social environments • Prioritize going out to bars and parties • Clothing and style are important and used as a status symbol • Prefer pop and dance music over other genres
Young Professional		Young Professionals value both socializing and their careers. Consequently, they look for like minded others that will party with them without pressuring them to do things that put their career at risk. They often go out in professional clothes and tend to go out earlier than other groups.	<ul style="list-style-type: none"> • Prioritize their career • Prioritize networking over dancing and partying • Prefer bars over nightclubs • Won't engage in behaviors they believe put their professional life at risk • Important to dress well, but not necessarily trendy

Figure 1 Young adult peer crowd sample images, description and some core values.

ethnically diverse; the largest segments were NH Whites (36.0%) and Hispanics (36.1%), followed by NH Asians (13.3%) and NH Other (10.3%), while NH Blacks (4.3%) made up the smallest portion of the sample. The largest peer crowd was Hipsters (this was the intervention group for the larger project), at ~29%. Tobacco products were used frequently, as is expected in an at-risk sample from bars and clubs; cigarettes were currently (past 30 days) used by 40.1% of the

sample, e-cigarettes were used by 21.2%, hookah use was 21.4%, cigars were 13.5%, smokeless was 7.5% and the overall current use of any tobacco product was 49%.

Pairwise comparisons of use by peer crowds and race/ethnicity

Overall, cigarette and other tobacco product use differed significantly between groups. Here, we describe the main

Table 1 Tobacco use by peer group and race/ethnicity (n, %) and pairwise comparisons

Peer crowd	Cigarettes	E-cigarettes	Hookah	Cigars	Smokeless	Any use
Homebody	129, 32.4% _a	68, 17.7% _{ad}	71, 17.7% _a	44, 11.2% _{bc}	28, 6.9% _{bc}	181, 44.6% _{ac}
Country	92, 34.2% _a	52, 19.5% _{acd}	55, 20.6% _a	43, 16.4% _a	28, 10.3% _a	128, 46.7% _a
Hip Hop	211, 46.5% _b	126, 27.4% _b	137, 29.2% _b	80, 17.4% _a	55, 11.7% _a	281, 59.9% _b
Hipster	439, 47.4% _b	199, 21.3% _c	182, 19.5% _a	113, 12.3% _b	54, 5.7% _b	550, 58.1% _b
Partier	143, 33.2% _a	89, 20.7% _{ac}	91, 20.9% _a	58, 13.4% _{bc}	41, 9.3% _a	208, 47.3% _a
Young Professional	207, 28.9% _a	109, 15.4% _d	125, 17.4% _a	66, 9.2% _c	37, 5.0% _c	303, 41.7% _c
Race/ethnicity						
NH White	452, 39.8% _a	201, 17.7% _a	201, 17.5% _a	118, 10.3% _a	71, 6.1% _a	584, 50.6% _a
NH Black	46, 34.6% _{ab}	31, 24.0% _{ab}	37, 22.2% _b	28, 21.2% _b	12, 9.0% _a	69, 50.7% _{ab}
NH Asian	134, 32.2% _b	82, 20.2% _{ab}	81, 12.3% _a	48, 11.6% _a	23, 5.4% _a	189, 44.4% _b
NH Other	149, 45.6% _c	76, 23.0% _b	83, 25.2% _{bc}	50, 15.2% _b	25, 7.4% _{ac}	198, 59.6% _c
Hispanic	415, 36.7% _a	242, 21.4% _b	244, 21.4% _{ac}	149, 13.2% _b	101, 8.7% _{bc}	574, 49.8% _a

Matching subscripts indicate no differences between groups. Comparisons were by year, product and race/ethnicity or peer crowd.
NH, Non-Hispanic.

findings; [table 1](#) lists all pairwise comparisons. The Hip Hop and Hipster groups exhibited the highest rates of cigarette use, as well as hookah and cigar use (for Hip Hop only) compared to other groups. For e-cigarettes, the Hip Hop group exhibited higher e-cigarette use than all other groups except Hipsters. The Hip Hop group exhibited the highest hookah and cigar use rates of any group except Country (for cigars only). Those affiliated with Country had higher smokeless use rates than Hipsters, Partiers and Young Professionals; and the Hip Hop crowd had higher rates than Young Professionals and Hipsters. Hip Hop and Hipster groups had the highest overall use of any product compared to the four other groups.

For cigarettes, NH Other had higher use rates than NH Black, NH Asian and NH Hispanic. E-cigarette use was lower among NH Whites compared to NH Other and Hispanics. NH Whites exhibited lower use of hookah compared to NH Blacks, NH Other and Hispanics. For cigars, NH Blacks and Hispanics had more users than NH Asians. Hispanics had more users of smokeless compared to NH Whites and NH Other. NH Whites and NH API had more overall users compared to NH Asians, but less than NH Other. Overall, Asians had the lowest use rates of all products.

Logistic regression analysis: peer crowd as a categorical predictor

A series of six logistic regressions were used to examine whether peer crowd remained a significant predictor of each of the six tobacco use outcomes (cigarettes, e-cigarettes, hookah, cigars, smokeless and any use) independent of race/ethnicity, sex, age, education and sexual orientation, and accounting for clustering based on city where data collection took place ([table 2](#)). The Homebody group was used as the reference group for the peer crowd variable. NH White served as the reference group for race/ethnicity as it was the largest group in both of the samples. We were less interested in the differences between groups; therefore, our analysis is focused on the overall contribution of the peer crowd and race/ethnicity variables (reported in [table 3](#)). Based on the Wald χ^2 test, we found that overall peer crowd was a significant predictor of cigarettes, e-cigarettes, hookah, smokeless and any use. Although the Wald χ^2 was not significant for peer crowd for cigars, the Hip Hop group did exhibit

significantly higher use rates than Homebodies. Race/ethnicity was only associated with cigarette use, hookah, cigars and any use.

Specifically, we found that the Hip Hop peer crowd was more likely to use cigarettes, e-cigarettes, hookah, cigars and use of any product compared to Homebodies. Hipsters were more likely to use cigarettes and any product compared to Homebodies. Young Professionals were less likely to use e-cigarettes than Homebodies. We also found that NH Blacks were more likely to use hookah and cigars compared to NH Whites. NH Other were more likely to use hookah and have any use compared to NH Whites, and Hispanics were more likely to use cigars than Whites.

Logistic regression analyses: peer crowd as a continuous predictor

We completed a parallel analysis where instead of entering peer crowd as a single categorical predictor, we entered six continuous peer crowd measures indicating the degree to which a person associates with each crowd ([table 3](#)). Peer crowd was a significant predictor for four products (cigarettes, e-cigarettes, cigars, and smokeless) and any use. Race/ethnicity was related to three products (cigarettes, hookah, and cigars) and any use.

Specifically, we found that increased affiliation with the Hip Hop peer crowd was associated with increased use of cigarettes, while being a Young Professional was associated with decreased risk. Hip Hop was also associated with an increased risk of e-cigarette and cigar use. Degree of Hipster affiliation was associated with decreased risk of smokeless use, and Young Professional affiliation was associated with decreased risk of any tobacco use. Results for race/ethnicity were similar to the first regression analysis, with the addition of Hispanic being associated with a decreased risk of cigarette use.

DISCUSSION

The results support our hypothesis that peer crowd is independently associated with use of a variety of tobacco products in bargaining young adults independent of race and ethnicity and other demographic variables. These findings are consistent with past research on youth peer crowds, which indicated that peer crowd identification was correlated with smoking and other risk behaviours.²⁷ Our findings suggest that peer crowds indeed

Table 2 Six logistic regressions for tobacco use comparing the contribution of peer group (categorical predictor) and race/ethnicity

Peer crowd	Cigarettes Wald χ^2 , p 68.10, p<0.0001 OR (95% CI)	E-cigarettes Wald χ^2 , p 18.28, p<0.05 OR (95% CI)	Hookah Wald χ^2 , p 19.41, p<0.001 OR (95% CI)	Cigars Wald χ^2 , p 10.12, p=0.07 OR (95% CI)	Smokeless Wald χ^2 , p 13.11, p<0.05 OR (95% CI)	Any use Wald χ^2 , p 55.96, p<0.0001 OR (95% CI)
Homebody	–	–	–	–	–	–
Country	0.97 (0.69 to 1.36)	1.06 (0.70 to 1.60)	1.26 (0.83 to 1.89)	1.40 (0.86 to 2.26)	1.42 (0.80 to 2.53)	1.03 (0.74 to 1.41)
Hip Hop	1.68 (1.26 to 2.25)	1.66 (1.17 to 2.34)	1.91 (1.35 to 2.69)	1.54 (1.01 to 2.35)	1.57 (0.95 to 2.62)	1.80 (1.35 to 2.37)
Hipster	1.81 (1.40 to 2.33)	1.27 (0.93 to 1.74)	1.22 (0.89 to 1.68)	1.14 (0.77 to 1.70)	0.85 (0.52 to 1.40)	1.72 (1.35 to 2.02)
Partier	1.00 (0.74 to 1.35)	1.22 (0.85 to 1.75)	1.28 (0.89 to 1.84)	1.06 (0.67 to 1.65)	1.24 (0.73 to 2.12)	1.11 (0.84 to 1.48)
Young Professional	0.87 (0.66 to 1.14)	0.90 (0.64 to 1.27)	1.11 (0.79 to 1.55)	0.90 (0.59 to 1.38)	0.82 (0.48 to 1.40)	0.94 (0.73 to 1.22)
Race/ethnicity	Wald χ^2 , p 12.62, p<0.05 OR (95% CI)	Wald χ^2 , p 4.34, p=0.36 OR (95% CI)	Wald χ^2 , p 11.47, p<0.05 OR (95% CI)	Wald χ^2 , p 12.46, p<0.05 OR (95% CI)	Wald χ^2 , p 5.76, p=0.22 OR (95% CI)	Wald χ^2 , p 13.70, p<0.01 OR (95% CI)
NH White	–	–	–	–	–	–
NH Black	0.74 (0.50 to 1.10)	1.32 (0.85 to 2.05)	1.75 (1.15 to 2.66)	1.95 (1.20 to 3.12)	1.31 (0.68 to 2.53)	0.95 (0.66 to 1.37)
NH Asian	0.80 (0.63 to 1.03)	1.20 (0.90 to 1.62)	1.08 (0.80 to 1.45)	1.23 (0.78 to 1.64)	0.89 (0.54 to 1.46)	0.84 (0.66 to 1.06)
NH Other	1.21 (0.93 to 1.56)	1.31 (0.96 to 1.78)	1.47 (1.09 to 1.98)	1.44 (0.98 to 2.11)	1.01 (0.61 to 1.67)	1.40 (1.09 to 1.82)
Hispanic	0.83 (0.70 to 1.00)	1.15 (0.92 to 1.42)	1.10 (0.88 to 1.36)	1.47 (1.12 to 1.94)	1.38 (0.99 to 1.93)	0.90 (0.76 to 1.08)

All models adjusted for age, sex, education, sexual orientation and location.
 Bold indicates significant differences.

Table 3 Six logistic regressions for tobacco use comparing the contribution of peer group (continuous predictor) and race/ethnicity

Peer crowd	Cigarettes OR (95% CI)	E-cigarettes OR (95% CI)	Hookah OR (95% CI)	Cigars OR (95% CI)	Smokeless OR (95% CI)	Any use OR (95% CI)
Homebody	0.97 (0.92 to 1.03)	1.00 (0.94 to 1.07)	0.96 (0.90 to 1.02)	1.00 (0.92 to 1.08)	1.01 (0.91 to 1.12)	0.95 (0.90 to 1.00)
Country	0.98 (0.93 to 1.04)	0.98 (0.92 to 1.05)	0.96 (0.90 to 1.03)	1.08 (0.99 to 1.17)	1.05 (0.95 to 1.16)	0.96 (0.91 to 1.01)
Hip Hop	1.06 (1.00 to 1.12)	1.08 (1.01 to 1.15)	1.04 (0.98 to 1.11)	1.10 (1.01 to 1.20)	1.09 (0.98 to 1.20)	1.04 (0.98 to 1.09)
Hipster	1.05 (0.99 to 1.10)	1.03 (0.97 to 1.09)	0.95 (0.89 to 1.01)	0.99 (0.91 to 1.07)	0.90 (0.82 to 0.99)	1.02 (0.97 to 1.07)
Partier	0.99 (0.94 to 1.05)	1.03 (0.97 to 1.10)	1.00 (0.94 to 1.07)	1.06 (0.97 to 1.15)	1.04 (0.94 to 1.15)	0.98 (0.93 to 1.03)
Young Professional	0.92 (0.87 to 0.97)	0.98 (0.92 to 1.05)	0.96 (0.90 to 1.02)	0.97 (0.89 to 1.05)	0.91 (0.82 to 1.00)	0.92 (0.87 to 0.96)
Race/ethnicity	Wald χ^2 , p 14.13, p<0.01 OR (95% CI)	Wald χ^2 , p 3.97, p=0.41 OR (95% CI)	Wald χ^2 , p 10.59, p<0.05 OR (95% CI)	Wald χ^2 , p 10.45, p<0.05 OR (95% CI)	Wald χ^2 , p 5.00, p=0.29 OR (95% CI)	Wald χ^2 , p 14.99 p<0.01 OR (95% CI)
NH White	–	–	–	–	–	–
NH Black	0.71 (0.48 to 1.04)	1.27 (0.81 to 1.98)	1.66 (1.09 to 2.52)	1.80 (1.11 to 2.93)	1.20 (0.62 to 2.31)	0.91 (0.63 to 1.31)
NH Asian	0.79 (0.62 to 1.01)	1.18 (0.87 to 1.59)	1.03 (0.77 to 1.39)	1.10 (0.76 to 1.61)	0.82 (0.50 to 1.35)	0.81 (0.64 to 1.03)
NH Other	1.21 (0.93 to 1.57)	1.32 (0.97 to 1.80)	1.46 (1.08 to 1.97)	1.42 (0.96 to 2.08)	0.98 (0.60 to 1.62)	1.40 (1.08 to 1.81)
Hispanic	0.82 (0.68 to 0.98)	1.13 (0.91 to 1.41)	1.08 (0.86 to 1.34)	1.44 (1.09 to 1.90)	1.31 (0.93 to 1.86)	0.89 (0.75 to 1.06)

All models adjusted for age, sex, education, sexual orientation and location.
 Bold indicates significant differences.

symbolise different social categories and that these diverse groups have unique health and risk behaviour norms. Pairwise comparisons indicated that there were significant differences between peer crowds for each of the five tobacco products and for use of any product. Overall, the Hip Hop group appears to have the highest use rates compared to most of the other peer crowds. Hipsters were also more likely to use e-cigarettes than Young Professionals and Homebodies and exhibited higher cigar use compared to Young Professionals.

The two logistic regression analyses built on our simple pairwise comparisons; the most important outcome of this analysis was to test our hypothesis that the unique contribution of the peer crowd variable remained statistically significant above and beyond demographics. Indeed, peer crowd, as a categorical or continuous predictor, was associated with cigarettes, e-cigarettes, hookah, smokeless and any tobacco product use. Race and ethnicity were associated with cigarettes, hookah, cigars and use of any tobacco product. The predictive strength of peer crowds suggests that adding peer crowd affiliation to demographic factors associated with tobacco use may be useful to identify tobacco use differences among young adult bar patrons.

These differences may or may not align with demographic categories. For example, one of the consistently high-risk peer crowds was Hip Hop. While NH Blacks are thought of as being part of this crowd, and indeed 17.9% of NH Blacks in this sample belonged to the Hip Hop crowd, the Hip Hop peer crowd was racially and ethnically diverse (27.4% White, 42.9% Hispanic, 11.9% Asian, 12.6% Other). Tobacco control campaigns targeting only NH Blacks might miss these other members of the Hip Hop peer crowd. We might also consider that while 49.8% of Hispanics in this sample used any tobacco product, 39% of Young Professional Hispanics used any tobacco product compared to 55% of Hipster Hispanics. A campaign that focuses its targeting by using only Hispanic ethnicity may not appeal to Hispanic Hipsters, the higher risk subgroup. Considering that peer crowds are united by, among other things, shared values and media consumption habits, public health programmes trying to reach and authentically speak to young adult audiences might use peer crowds to reach high-risk young adults efficiently.

Social identity theory^{9–11} states that a significant element of self-concept is a consequence of social and group memberships. Group norms are of increased importance for individuals who have salient social identities. Therefore, targeted marketing can be used to capitalise on these norms and attach specific meanings to behaviours either to promote healthy behaviours or to discourage unhealthy behaviours such as substance use.^{12–14} Experimental research in adolescents has found peer crowd-targeted messages increased antismoking attitudes and decreased smoking susceptibility among those who identified with the targeted peer crowd.³² Additionally, peer crowd-targeted interventions have shown promising results at reducing young adult smoking. Specifically, the Commune (California) and HAVOC (Oklahoma and New Mexico) Social Branding interventions have seen success targeting a single peer crowd, Hipsters and Partiers, respectively.^{13 33 34}

Overall, it appears that the method of selecting pictures and classifying individuals into peer crowds based on their photo selections using the I-Base Survey is an effective tool and might be used to assist in planning antitobacco campaigns for high-risk young adults. For example, social marketing campaigns or other types of health-related messaging might use these peer crowd

groups and the corresponding identities to craft messages based on the peer crowd's values that resonate most with these individuals. In addition, understanding the relationship between peer crowd identification and tobacco use might provide additional information on how targeted marketing contributes to differences in tobacco use. Efforts that target peer crowds may use funds more efficiently to reach those at highest risk compared to general population campaigns.

Limitations

The main limitation of our findings is that the sample is specific to bar-goers in California in metropolitan cities and thus is not generalisable to other populations. However, bar patrons were the focus of this study based on their general higher tobacco use levels, including use of many different tobacco products. There are very little data on peer crowds and alternative tobacco product use. In addition, bars in this study sample were selected to reflect the Hipster population, so not every bar or nightclub popular with the young adult population was sampled. Bar owner or patron refusals could also be a source of potential bias. Tobacco use information was all self-reported and not verified with biomarkers. Finally, we cannot assume causality due to the cross-sectional design.

CONCLUSION

Tobacco product use varies by peer crowd independent of racial/ethnic groups and might warrant targeted intervention. Cigar and cigarillo use was high among the Hip Hop crowd and among NH Blacks. Hip Hop was consistently the most at-risk group across tobacco products and thus might warrant further intervention. Information on peer crowd affiliation may be used to develop more effectively targeted health campaigns. The increasing use of social media suggests new sources of information about individuals, and their social affiliations might be leveraged to understand and more precisely target messages to high-risk subgroups.

Future research should seek not only to replicate these findings but also to extend these findings to other non-tobacco-related outcomes, including positive health behaviours. Peer crowd affiliation may be an effective way to further refine public health campaigns that attempt to reach young adults.

What this paper adds

- Young adults use tobacco at high rates, but few studies examine the role of identity and social cultures (eg, peer crowd affiliation) in addition to sociodemographic factors associated with tobacco use despite their common use in marketing campaigns to promote tobacco use.
- This study found that affiliation with different peer crowds was associated with smoking, independent of race/ethnicity, age, sexual orientation and education.
- This study also examined multiple non-cigarette tobacco products (e-cigarettes, cigars, hookah, and smokeless tobacco) and found that peer crowd was independently associated with use of almost all alternative products.
- Peer crowd affiliation adds additional information to demographics in order to better characterize high risk subgroups of young adults and facilitate development of targeted anti-tobacco campaigns that reflect group membership and values.

Contributors NEL conceptualised the study and discussed the study design with all coauthors. NEL analysed and interpreted the data, drafted the initial manuscript and contributed to all subsequent drafts of the manuscript, and approved the final manuscript as submitted. JWJ developed measures used in the study, reviewed and revised the manuscript, contributed to the drafts and approved the final manuscript as submitted. PML helped conceptualise the study, obtained funding, reviewed and revised the manuscript, and approved the final manuscript as submitted.

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